



System Components:

- a) Battery Bag & 36 Volt Battery*
- b) Mid-Drive Crankset & Motor
- c) Control Console

- d) Speedometer "Speed" Sensor**
- e) Power Cable Connection
- f) Lights (Front and Rear)***

* Several 36v battery systems are available. Battery location, appearance, and associated accessories may vary.

** the Speedometer Sensor is located on the chainstay of the non-drive side.

*** Lights are available as an add-on feature for some bikes.

Description:

The Bike Friday Mid-Drive e-assist system includes a motor and torque sensor in the crankset. That means the harder you pedal, the more the electric motor will assist. This helps you feel powerful and capable, and still feels like riding a bike (versus a throttle-based motor vehicle). A console on the handlebar lets you fine-tune how much proportional assist is provided plus displays speed and other ride details.

We designed electric assist bikes for cyclists with these values:

- We believe that pedaling is an essential part of cycling and keeping control of the bike. Therefore, you must be pedaling for the e-assist to work.
- Bike Friday E-assist systems are “**Class One**” pedal assist bikes.
- The system is intended to be complimentary to your riding needs, in everyday use, and it must be light in weight and convenient to use.
- We want all Bike Friday products to deliver the best value when considering weight, function, and cost for an overall high-quality investment.

NOTE: Class One E-systems are defined as having a maximum speed of 20 MPH and are equipped with an electric motor without throttle that works when the rider is pedaling.

Bike Friday Mid-Drive Systems:

- Are **36 Volt nominal systems**. (42 volts full charge/ 30 volt safety cut-off)
- The nominal voltage of a system is **the value assigned to a system or circuit of a given voltage class for the purpose of convenient designation**. The actual voltage may vary above or below this value. This is managed by the batteries **BMS** (Battery Management System) which will shut off the battery if the voltage level is too high, too low, or if the pack becomes unbalanced.
- All systems are **Pedal Assist only** so there is no electric assist without pedaling (this is mandated by law in some countries). Our bikes do not have a throttle.
- From the factory, we program the controller to provide **20 mph maximum assist**, as specified by U.S. government “**Class One E-bike**” laws.

****IMPORTANT INFORMATION****

Assist Level use 1-4:

- ➔ For extended climbs use only levels 1-2. Levels 3 and 4 are only designed for flat sections, rolling hills, and descents at speed. Level 2 will suit best for maximum climb. Use lower gears.
- ➔ Extended climbing in levels 3 or 4 may overheat the controller, quickly drain your battery, and can cause damage to the system. Basically, you would need much larger and heavier batteries than you would want to carry.

Assembling Your E-assist Components:

1. **Battery Charging:**

NOTE: Battery(s) will be delivered in a partially-discharged state due to shipping regulations. Please fully charge battery(s) before your first ride. **Red** light on the charger indicates it has connected to the battery, and is delivering charge. When the LED shows **Green**, you have a full charge of about 42 volts.

(See “**Lithium Battery Care Guidelines**” section for more information on Page 7.)

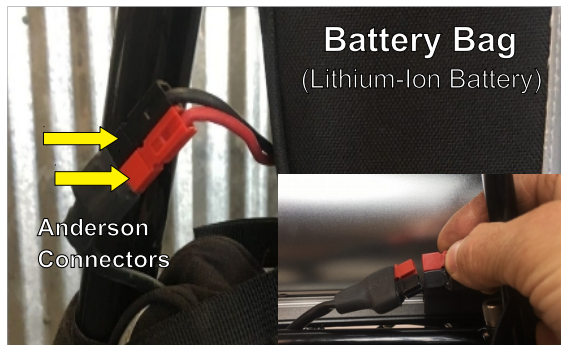
2. **Strap battery bag onto bike frame, rear rack, or behind the seat mast.**

(Or whichever area best suits your riding preference.)



3. Connect **RED** and **BLACK** Anderson connectors from battery to motor (**RED** and **BLACK** connectors). Store connectors and extra cable length inside the battery bag.

NOTE: Connect RED to RED and BLACK to BLACK



Anderson Connectors & Battery Bag



Lithium-Ion Battery/ Bag

4. **Connect Speedometer Cable/ Lights**
Locate the cable from the rear wheel speed sensor and connect it to the corresponding cable attached to the motor assembly. The light power cable can also plug into the opposite side of the connection.

NOTE: There may be 2 identical ports on the speedometer cable (as shown). You can connect to either - they are interchangeable.

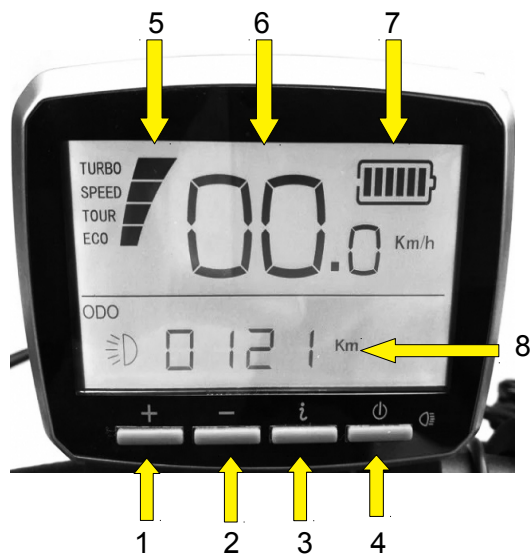


NOTE: Connectors may require additional strength to ensure they are seated correctly. A snug fit with no obvious space between the connector and wire showing is desired.

(See "**Lithium Battery Care Guidelines**" section for more information on Page 7)

Your E-Assist System will come with (1) **Display Console/ Monitor**. Below are examples of what they may look like.







- 1.) Up Button (Increases assist level)
- 2.) Down Button (Decreases assist level)
- 3.) Additional Displays/ Information
- 4.) Power/ Start Button/ Lights
- 5.) Pedal Assist Level (4 Levels)
- 6.) Riding Speed
- 7.) Battery Charge Capacity Indicator
- 8.) Distance/ Odometer

Assembling your e-assist Components (cont):

5. Operate Handlebar Control Console/ Monitor

- a. **Power on/off** - NOTE: battery(s) must first be charged and connected (see above): **With the bike stationary, and your feet off the pedals, tap**  **to power on the system (Hold**  **to power off). Then put your feet on the pedals and go.**



b. Set Assist Level - Default setting at power on = **ECO** (minimal assist)



Tap **+** (or) **-** to set assist level

“OFF” = no pedal assist power

ECO = minimum pedal assist power

TOUR = moderate pedal assist power

SPEED = increased pedal assist power

TURBO = maximum pedal assist power

c. Adjust Display: Tap **(+/-)** buttons to cycle through display option




Display 1 = Odometer (ODO)

Display 2 = Trip Distance (TRIP)*

Display 3 = Average Speed (AVG)*

Display 4 = Trip Riding Time (TIME)

*To reset TRIP, AVG, and TIME, **Hold**  for 3 seconds.

d. Backlight: After power is on, Tap  to toggle on/off display backlight.

Tips for Riding an e-bike:

➔ Before each ride, check that brakes are functioning correctly, and that all frame connections and/or quick-release levers are secure.

➔ Start without assist for ½ a block, then set assist power setting to “Eco” or “Tour”, especially when the bike is new to you. This is a great reminder of how the “assist” is helping you.

NOTE: When you first turn on e-assist, do not have pressure on pedals (coasting) as it takes a few seconds for the system to turn on and calibrate. When the display comes on, you will be ready to begin pedaling.

➔ Use only as much e-assist power as you need. This will help maximize battery range and keep you aware of situations you encounter. This maximizes the cycling ride and sense of speeds consistent with a strong rider

➔ Be aware of obstacles and loose surfaces (sand, gravel, etc.). You may be riding at faster speeds than without electric assist, so give yourself extra time to stop or avoid these conditions. The extra torque from the motor can make it easier to lose traction on loose surfaces.

- ➔ Be mindful of other cyclists, pedestrians, and vehicle drivers who may be surprised by the rapid speed or acceleration of an e-bike rider. When riding with others, best manners are to use the assist to keep up, not to drop others!
- ➔ When preparing for use: charge batteries to full charge to ensure maximum range is available for longer rides.
- ➔ Although wires are coated, they can still be susceptible to damage or cutting. Always be careful when folding/ unfolding, stowing, or disassembling your bike, as this is when damage usually occurs.

Lithium Battery Care Guidelines:

E-bike batteries will rapidly become unusable if stored for extended periods of time in a depleted state. For example, if batteries are left without an optimal charge in Winter for several months. Conversely, with proper care and maintenance your battery will provide years of usable life. If the battery is stored very low, they may never take a charge again.

- ➔ During regular use (riding and charging at least once a week), it is okay to leave the battery packs on the bike for convenience when not riding and/or while charging.
- ➔ Never store an empty battery. Always ensure the battery has at least a 50% charge before storing. (**Optimal storage charge is between 50-75%**)
- ➔ When storing your bike and/or battery(s) without use for a month or more, check that voltage is between **35-39 volts** before plugging the battery into the charger approximately **once a month to** ensure the battery contains an optimal storage charge (50-75%). This will help maintain overall battery health and allow for maximum cycles.

Remember:

- 1.) Ensure the battery is **unplugged** from the system.
- 2.) Ensure the battery is **optimally charged (50-75% best for storage for 36 volt nominal battery, and between 35-39 volts.)**

- ➔ Disconnect the battery from the charger between charging sessions. While it is fine to leave a battery on a charger overnight to allow a full charge, **do not leave the battery connected indefinitely to a charger.** This can be hard on the battery and the charger and has a parasitic load that is wasteful.
- ➔ **NEVER** charge when battery is in freezing temperatures (Below 32 degrees). It is safe to use/ discharge in freezing temperatures. Make sure the battery is no longer colder than 32 degrees before charging. Bring the battery inside and let it sit for 1-2 hours before charging after being in the freezing cold. Range will decrease in cold temperatures to 80% capacity.
- ➔ With proper care, you should get about 500 full charges in a batteries usable lifespan. Several factors play a role in the depletion of your battery including terrain type, weight, pedal assist settings, and both very high or low temperatures. (**See example below**)

EXAMPLE:

“Alan rides his bike to work and back 5-6 days a week, plus some other trips averaging around 30-40 miles per week. All flat with no hills. He has a 10 amp hours/ 36 volt battery ($10 \times 36 = 360$ watt hours). This is well in the range of the battery (usually using about 7 watt hours per mile). Alan charges his battery 1x weekly. He expects his battery to last about 10 years (10×52 weeks = 520 charges).”

Additional Details on Monitoring Battery Life

A new battery will fully charge to 42 volts (100%) for a 36 volt nominal system. **The system is programmed to automatically turn off when only 30 volts are left within the battery.** The battery must be charged before further use. Your battery may fall below 30 volts during long term storage. If it falls below about 27 volts, it will no longer take a charge, and become unusable (BMS will not allow charging). If you would like to monitor your batteries voltage more accurately, **a voltage tester** can quickly inform you of your battery's charge levels.



Troubleshooting:

If system will not power on:

- Ensure batteries are connected and charged sufficiently. Check all cable connectors and ensure there are no damaged or broken wires.

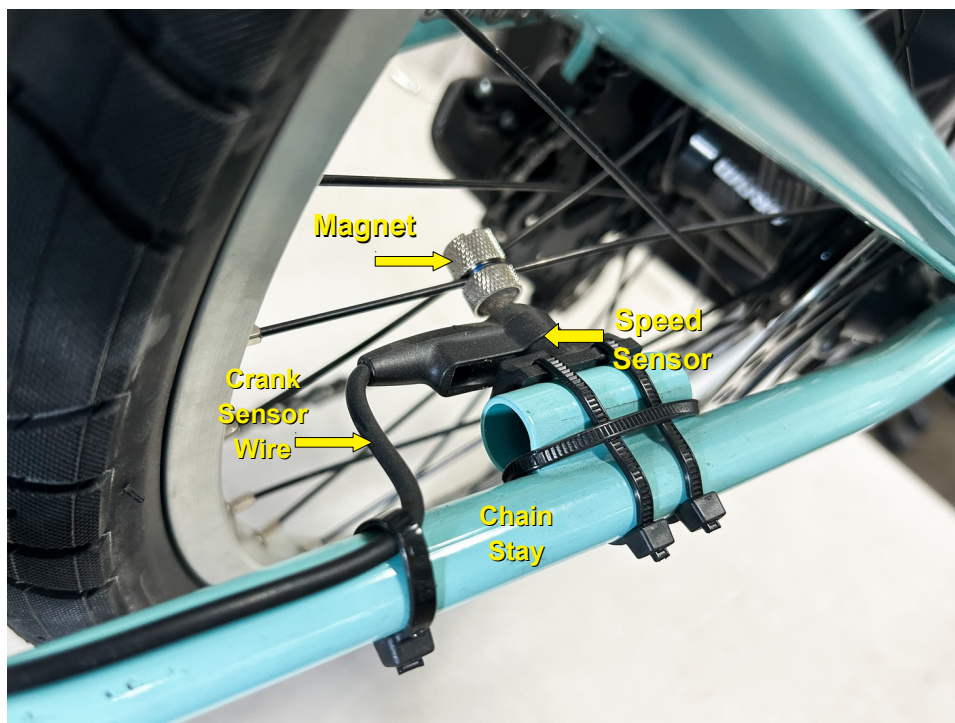
→ If system powers on, but does not provide assistance:

Set assist level at console to Level 1 or higher.

 /  Tap to set assist level

“0” = no pedal assist power (ECO setting)

- Check that Speedometer sensor is in close proximity (2-5mm) to the magnet on the wheel spokes if you have an external speed sensor. These components are located on the rear wheel, in the motor (needs no adjusting), and chain stay. In some situations, it may be possible for the sensor to get knocked out of position. If your bike has an external sensor, rotate the sensor and/or magnet as necessary to a functional position.



NOTE: Turn unit on with feet off of the pedals to allow for the torque sensor to calibrate before pedaling. The unit calibrates the torque sensing every time it is switched on.

Mid-Drive Motor Wiring Instructions:

NOTE: From the Mid-Drive Motor there are 3 connection cables:



Cable #1: Is the power supply cable that connects directly to your Lithium Ion battery through red and black Anderson Connectors.



**Lithium Ion
Battery**

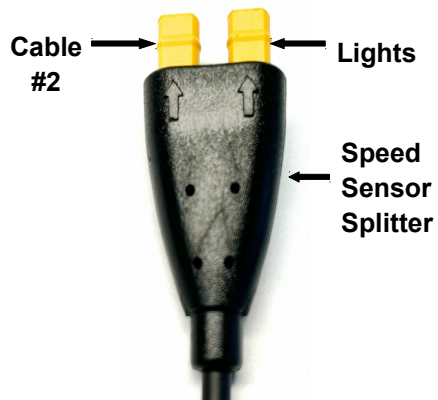


**Anderson
Connectors**



Cable #2: Connects directly to the Speed Sensor Splitter, which provides signal communication from the Speed Sensor to the motor. The connection is made through a two-way splitter (part of the Speed Sensor). Cable #2 also provides the power for the front and rear lights that plug into the opposite side of the splitter.

(Note: It does not matter which side of the splitter each is plugged into.)

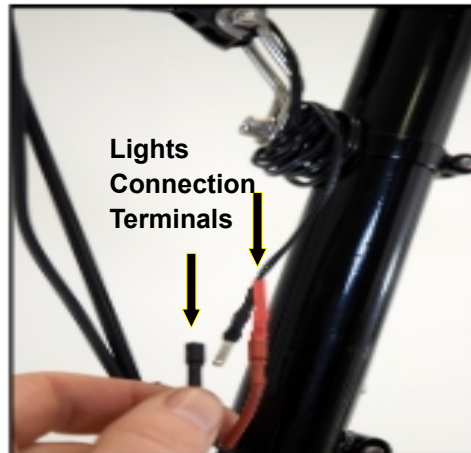


**Speed
Sensor**



**Cable #2 &
Lights
Connected to
Speed Sensor
Splitter**

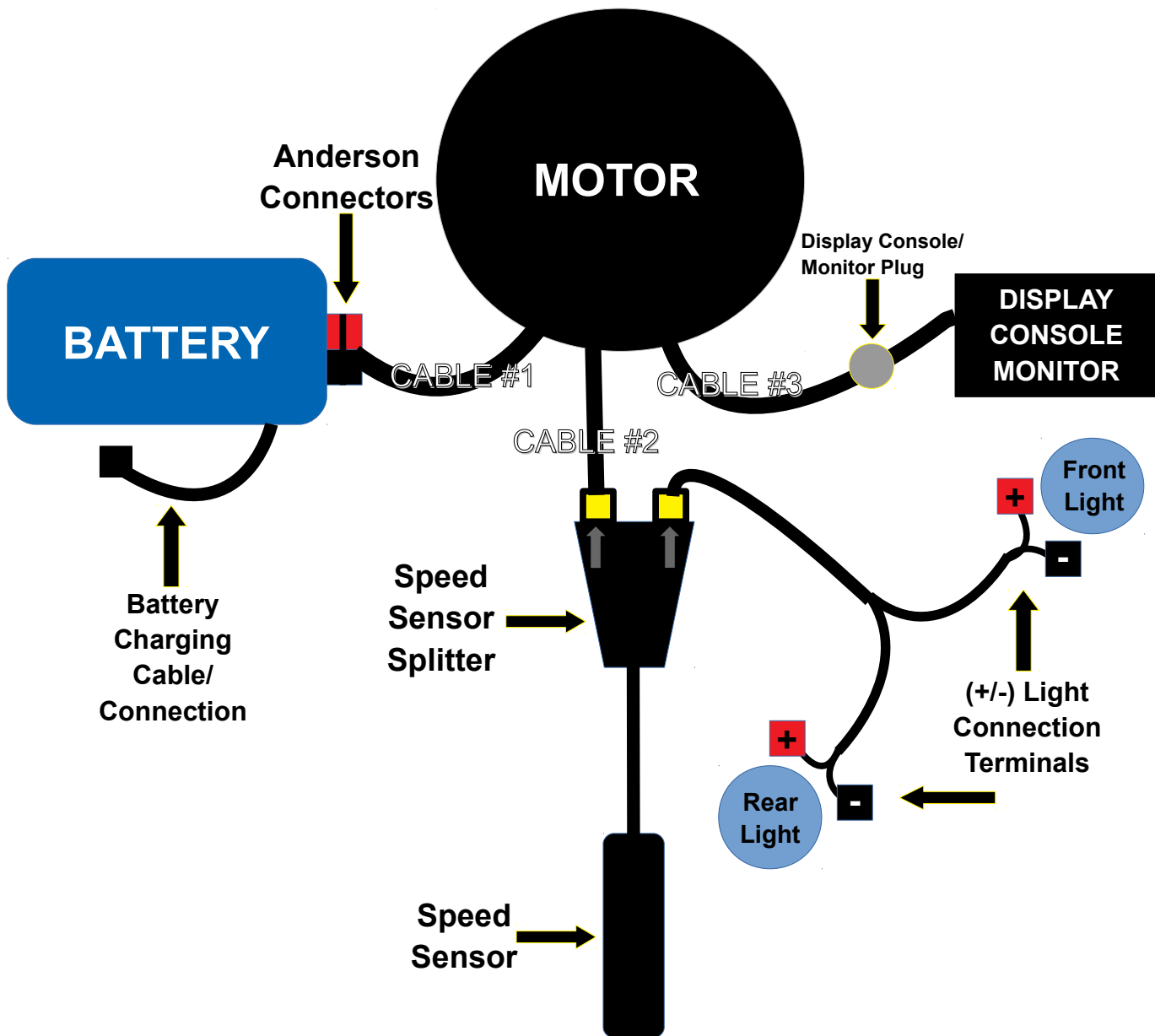
NOTE: The connection from the Speed Sensor Splitter to the lights will have (1) red and (1) black connection terminal for each light (Positive and Negative). This provides power to the light system. (Front and Rear)



Cable #3: Connects directly to the Display Console/ Monitor plug to provide power as well as riding communication/ information.



Mid-Drive Motor Wiring Diagram



Safety Tips:

- ➔ To avoid any water damage or corrosion to the battery, ensure your connectors are fully engaged and your battery is stored in its bag during riding.
- ➔ Avoid damage and failure due to misuse, neglect, or improper storage (example: 45 days without using or charging your battery can damage it) or other forms of use not designed for, but not limited to; jumping, competition, or modifications after purchase.

(See Lithium Battery Care Guidelines on page 7.)

Warranty Information:

We always want to keep you riding so we offer a warranty on electric assist products. The electric assist world has very limited warranties so Green Gear Cycling is shouldering the cost of what we offer in most cases, even though we do not manufacture the electronics ourselves.

Green Gear Cycling Inc. Electric Assist Product Warranty

We warranty our electric assist components (motor, controller, charger, and displays) against defects in workmanship and materials for 1 year. Batteries come with a one month warranty. The most likely issues arise when a battery has not been maintained properly, or the damage to wires when packing and unpacking your bike. Review the "Lithium Battery Care Guidelines" section above on Page 7.

This warranty is expressly limited to the repair or replacement of the defective part at the discretion of Green Gear Cycling. This is the sole remedy of the warranty. This warranty applies only to the original owner and is not transferable.

The cost of shipping of the defective components back to Green Gear Cycling is the sole responsibility of the purchaser. Please contact Green Gear Cycling to register a claim and obtain an Return Authorization Number prior to shipping anything back to Green Gear Cycling. (service@bikefriday.com)

NOTE: Never ship batteries to Bike Friday for warranty repair.

Common problems NOT covered by the warranty:

- ➔ Improper care of battery - Our batteries are sophisticated pieces of electronics that will provide 500+ charge cycles of reliable service if properly cared for, but batteries can be easily damaged due to misuse. Please reference the “Lithium-Ion Battery Maintenance Guidelines” section above for information to ensure a reliable, long life from your battery.
- ➔ Damage and failure of battery can occur due to misuse, neglect, improper storage (For Example: 45 days without using or charging your battery can damage it if not at optimal charge range of 50-75% for 36 volt nominal level) or other forms of use not designed for but not limited to jumping over objects, competition, or use of 3rd party components.

This warranty does not cover normal wear and tear, improper assembly or maintenance, or installation of parts or accessories not originally intended or compatible with the electric assist system as sold. Green Gear Cycling Inc. is not responsible for incidental or consequential damages. This warranty gives you specific rights, and those rights may vary from place to place. This warranty does not affect the statutory rights of the consumer. The warranty applies to electric assist components purchased directly from Green Gear Cycling, Inc., or from its authorized dealers. Except as provided herein, this product is provided “as is” without any additional WARRANTY of any kind, including the WARRANTY OF MERCHANTABILITY and the WARRANTY of FITNESS FOR A PARTICULAR PURPOSE, whether EXPRESSED or IMPLIED.

MID-DRIVE DEFINITION KEY:

- **Mid-Drive Motor:** An electric bike motor that installs into the bottom bracket, which usually incorporates a crank set plus a torque sensor.
- **Torque Sensor:** A system that senses how much pedaling force is being applied to the pedals.
- **Pedal Assist System (PAS):** An E-bike system that senses and adds to pedaling forces. Typically a PAS negates the need for a throttle. The level of assist can be raised and lowered with an external control on the console/ monitor with a push of a button.
- **Console/ Monitor:** A handlebar mounted monitor/display used to display speed, battery charge, control pedal assist levels, and to turn the system on and off.
- **Speed Sensor:** The speed sensor enables you to determine the distance traveled as well as the speed at any time by determining the speed and distance of a trip based on the wheel circumference of a bike through the rotations of the magnet.